

CLAIMS

1. A multilayer printed wiring board in which an interlayer insulation layer and a conductive layer are formed on a multilayer core substrate composed of front and rear conductive layers and at least a conductive layer as an inner layer and electric connection is performed through via holes,  
5 at least one of the sum of the thicknesses of the power source conductive layers in said multilayer core substrate and the sum of the thicknesses of the grounding conductive layers is larger  
than the thickness of the conductive layer on the interlayer  
10 insulation layer.
2. The multilayer printed wiring board according to claim 1 wherein assuming that the sum of the thicknesses of the power source conductive layers in said multilayer core substrate is  
15  $\alpha_1$  and the thickness of the conductive layer on the interlayer insulation layer is  $\alpha_2$ , the relation between  $\alpha_1$  and  $\alpha_2$  is  
 $\alpha_2 < \alpha_1 \leq 40\alpha_2$ .
3. The multilayer printed wiring board according to claim 1 wherein assuming that the sum of the thicknesses of the  
20 grounding conductive layers in said multilayer core substrate is  $\alpha_3$  and the thickness of the conductive layer on the interlayer insulation layer is  $\alpha_2$ , the relation between  $\alpha_3$  and  $\alpha_2$  is  
 $\alpha_2 < \alpha_3 \leq 40\alpha_2$ .
4. The multilayer printed wiring board according to claim 1  
25 wherein assuming that the sum of the thicknesses of the power source conductive layers in said multilayer core substrate is  $\alpha_1$  and the thickness of the conductive layer on the interlayer insulation layer is  $\alpha_2$ , the relation between  $\alpha_1$  and  $\alpha_2$  is  
 $1.2\alpha_2 \leq \alpha_1 \leq 40\alpha_2$ .
- 30 5. The multilayer printed wiring board according to claim 1 wherein assuming that the sum of the thickness of the grounding conductive layer in said multilayer core substrate is  $\alpha_3$  and the thicknesses of the conductive layers on the interlayer

insulation layer is  $\alpha_2$ , the relation between  $\alpha_3$  and  $\alpha_2$  is  
 $1.2\alpha_2 \leq \alpha_3 \leq 40\alpha_2$ .

6. The multilayer printed wiring board according to claim 1 wherein assuming that the sum of the thicknesses of power source conductive layers in said multilayer core substrate is  $\alpha_1$  and the thickness of the conductive layer on the interlayer insulation layer is  $\alpha_2$ , the relation between  $\alpha_1$  and  $\alpha_2$  is  $\alpha_2 < \alpha_1 \leq 40\alpha_2$  and assuming that the sum of the thicknesses of the grounding conductive layers in said multilayer core substrate is  $\alpha_3$ , the relation between  $\alpha_3$  and said  $\alpha_2$  is  $\alpha_2 < \alpha_3 \leq 40\alpha_2$ .
7. The multilayer printed wiring board according to claim 1 wherein assuming that the sum of the thicknesses of the power source conductive layers in said multilayer core substrate is  $\alpha_1$  and the thickness of the conductive layer on the interlayer insulation layer is  $\alpha_2$ , the relation between  $\alpha_1$  and  $\alpha_2$  is  $1.2\alpha_2 \leq \alpha_1 \leq 40\alpha_2$  and assuming that the sum of the thicknesses of the grounding conductive layers in said multilayer core substrate is  $\alpha_3$ , the relation between  $\alpha_3$  and said  $\alpha_2$  is  $1.2\alpha_2 \leq \alpha_3 \leq 40\alpha_2$ .
8. The multilayer printed wiring board according to any one of claims 1-7 wherein the thickness of the conductive layer on the front and rear surfaces of said multilayer core substrate is smaller than the thickness of the conductive layer of the inner layer.
9. A multilayer printed wiring board in which interlayer insulation layer and conductive layer are formed on multilayer core substrate composed of three or more layers, having a plurality of through holes for connecting the front surface with the rear surface and conductive layers on the front and rear surfaces and conductive layer in the inner layer so as to achieve electric connection through via holes, said a plurality of through holes being composed of a plurality of power source through holes, a plurality of grounding through

- holes and a plurality of signal through holes connected electrically to a power source circuit or a grounding circuit or a signal circuit of an IC chip,
- when said power source through holes pass through the grounding conductive layer of the inner layer in the multilayer core substrate, of the plurality of power source through holes, at least a power source through hole just below the IC having no conductive circuit extending from the power source through hole in the grounding conductive layer.
10. A multilayer printed wiring board in which interlayer insulation layer and conductive layer are formed on multilayer core substrate composed of three or more layers, having a plurality of through holes for connecting the front surface with the rear surface and conductive layers on the front and rear surfaces and conductive layer in the inner layer so as to achieve electric connection through via holes,
- said a plurality of through holes being composed of a plurality of power source through holes, a plurality of grounding through holes and a plurality of signal through holes connected electrically to a power source circuit or a grounding circuit or a signal circuit of an IC chip,
- when said grounding through holes pass through the power source conductive layer of the inner layer in the multilayer core substrate, of the plural grounding through holes, at least a grounding through hole just below the IC having no conductive circuit extending from the grounding through hole in the power source conductive layer.
11. A multilayer printed wiring board in which interlayer insulation layer and conductive layer are formed on a multilayer core substrate composed of four or more layers,
- having a plurality of through holes for connecting the front and rear surfaces and conductive layers on the front and rear surfaces and conductive layer in the inner layer so as to

achieve electric connection through via holes,  
said multilayer printed wiring board having the power source  
through holes described in claim 9 and the grounding through  
holes described in claim 10.

5       12. A multilayer printed wiring board in which interlayer  
insulation layer and conductive layer are formed on a  
multilayer core substrate composed of three or more layers,  
having a plurality of through holes for connecting the front  
and rear surfaces and conductive layers on the front and rear  
10      surfaces and conductive layer in the inner layer so as to  
achieve electric connection through via holes,  
said a plurality of through holes being composed of a plurality  
of power source through holes, a plurality of grounding through  
holes and a plurality of signal through holes connected  
15      electrically to a power source circuit or a grounding circuit  
or a signal circuit of an IC chip,  
when said power source through holes pass through the grounding  
conductive layer of the inner layer in the multilayer core  
substrate, of the plurality of power source through holes, 70%  
20      or more power source through holes having no conductive circuit  
extending from the power source through hole in the grounding  
conductive layer.

13. A multilayer printed wiring board in which interlayer  
insulation layer and conductive layer are formed on a  
25      multilayer core substrate composed of three or more layers,  
having a plurality of through holes for connecting the front  
and rear surfaces and conductive layers on the front and rear  
surfaces and conductive layer in the inner layer so as to  
achieve electric connection through via holes,  
30      said a plurality of through holes being composed of a plurality  
of power source through holes, a plurality of grounding through  
holes and a plurality of signal through holes connected  
electrically to a power source circuit or a grounding circuit

- or a signal circuit of an IC chip,  
when said grounding through holes pass through the power source  
conductive layer of the inner layer in the multilayer core  
substrate, of the plurality of grounding through holes, 70% or  
5 more grounding through holes having no conductive circuit  
extending from the grounding through hole in the power source  
conductive layer.
14. A multilayer printed wiring board in which interlayer  
insulation layer and conductive layer are formed on a  
10 multilayer core substrate composed of four or more layers,  
having a plurality of through holes for connecting the front  
and rear surfaces and conductive layers on the front and rear  
surfaces and conductive layer in the inner layer so as to  
achieve electric connection through via holes,
- 15 said multilayer printed wiring board having the power source  
through holes described in claim 12 and the grounding through  
holes described in claim 13.
15. The multilayer printed wiring board according to any one  
of claims 9-14 wherein assuming that the sum of the thicknesses  
20 of the power source conductive layers in said multilayer core  
substrate is  $\alpha_1$  and the thickness of the conductive layer on  
the interlayer insulation layer is  $\alpha_2$ , the relation of  
 $\alpha_2 < \alpha_1 \leq 40\alpha_2$  exists.
16. The multilayer printed wiring board according to claim 15  
25 wherein said  $\alpha_1$  is in a relation of  $1.2\alpha_2 \leq \alpha_1 \leq 40\alpha_2$ .
17. The multilayer printed wiring board according to any one  
of claims 9-16 wherein the conductive layers on the front and  
rear surfaces of said multilayer core substrate are power  
source conductive layers or grounding conductive layers.
- 30 18. The multilayer printed wiring board according to any one  
of claims 9-16 wherein said multilayer core substrate has a  
thick conductive layer in the inner layer and thin conductive  
layers on the front and rear surfaces.

19. The multilayer printed wiring board according to any one of claims 9-16 wherein the conductive layer of the inner layer in said multilayer core substrate is composed of two or more layers.
- 5 20. The multilayer printed wiring board according to any one of claims 9-16 wherein a capacitor is mounted on the surface thereof.
21. A multilayer printed wiring board in which interlayer insulation layer and conductive layer are formed on a
- 10 multilayer core substrate composed of three or more layers, having a plurality of through holes for connecting the front and rear surfaces and conductive layers on the front and rear surfaces and conductive layer in the inner layer so as to achieve electric connection through via holes,
- 15 said a plurality of through holes being composed of a plurality of power source through holes, a plurality of grounding through holes and a plurality of signal through holes connected electrically to a power source circuit or a grounding circuit or a signal circuit of an IC chip,
- 20 when said power source through holes pass through the grounding conductive layer of the inner layer in the multilayer core substrate, of the plurality of power source through holes, part of the power source through hole just below the IC having no conductive circuit extending from the power source through hole
- 25 in the grounding conductive layer.
22. A multilayer printed wiring board in which interlayer insulation layer and conductive layer are formed on multilayer core substrate composed of three or more layers, having a plurality of through holes for connecting the front surface with the rear surface and conductive layers on the front and rear surfaces and conductive layer in the inner layer so as to achieve electric connection through via holes,
- 30 said a plurality of through holes being composed of a plurality

of power source through holes, a plurality of grounding through holes and a plurality of signal through holes connected electrically to a power source circuit or a grounding circuit or a signal circuit of an IC chip,

5 when said grounding through holes pass through the power source conductive layer of the inner layer in the multilayer core substrate, of the plurality of grounding through holes, part of the grounding through hole just below the IC having no conductive circuit extending from the grounding through hole  
10 in the grounding conductive layer.

23. A multilayer printed wiring board in which interlayer insulation layer and conductive layer are formed on a multilayer core substrate composed of four or more layers, having a plurality of through holes for connecting the front  
15 and rear surfaces and conductive layers on the front and rear surfaces and conductive layer in the inner layer so as to achieve electric connection through via holes,  
said multilayer printed wiring board having the power source through holes described in claim 21 and the grounding through  
20 holes described in claim 22.

24. The multilayer printed wiring board according to claim 11 wherein the through holes just below the IC are disposed in the form of a grid or in a staggered fashion.

25. The multilayer printed wiring board according to claim 24 wherein the power source through holes and grounding through holes just below the IC are disposed alternately.

26. The multilayer printed wiring board according to claim 14 wherein the power source through hole having no conductive circuit extending from the power source through hole in the  
30 grounding conductive layer and the grounding through hole having no conductive circuit extending from the grounding through hole in the power source conductive layer are disposed in the form of a grid or in the staggered fashion just below

the IC.

27. The multilayer printed wiring board according to claim 26  
wherein the power source through hole having no conductive  
circuit extending from the power source through hole in the  
5 grounding conductive layer and the grounding through hole  
having no conductive circuit extending from the grounding  
through hole in the power source conductive layer are disposed  
alternately.

28. The multilayer printed wiring board according to claim 23  
10 wherein the power source through hole having no conductive  
circuit extending from the power source through hole in the  
grounding conductive layer and the grounding through hole  
having no conductive circuit extending from the grounding  
through hole in the power source conductive layer are disposed  
15 in the form of a grid or in the staggered fashion just below  
the IC.

29. The multilayer printed wiring board according to claim 28  
wherein the power source through hole having no conductive  
circuit extending from the power source through hole in the  
20 grounding conductive layer and the grounding through hole  
having no conductive circuit extending from the grounding  
through hole in the power source conductive layer are disposed  
alternately.